



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,173	12/01/2003	Nahar Singh	P02,0162-01	2059

7590 01/25/2007  
SCHIFF HARDIN & WAITE  
Patent Department  
6600 Sears Tower  
233 South Wacker Drive  
Chicago, IL 60606

EXAMINER
----------

MASLOVA, OXANA

ART UNIT	PAPER NUMBER
----------	--------------

2859

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/25/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/725,173

Applicant(s)

SINGH ET AL.

Examiner

Oxana Maslova

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 18-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 18-26 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Luukkala (US 4,906,107) in view of Kim et al (US 4,516,864) (hereinafter Kim).

Luukkala discloses in Fig.2 an immersive probe that provides measurement of the temperature in a liquid container (oil tanks and cisterns) (col. 1 lines 20-23), having a temperature below a melting point of the chemical/ paraffin wax (col.3 lines 1-2); detecting a value of an optical signal generated by transmission of the light signal through the chemical/paraffin wax (col.3 lines 1-2) in a solid state and at the room temperature; and detecting an optical signal generated by transmission of the light signal through the chemical/paraffin wax at its melting point and in liquid phase (col.4 lines 47-56); transmitted light signal from the probe is sent to the receiver 9. Receiver has been connected to fiber 11, using a mirror 10; includes means for detecting the light received and an electronic circuit for providing and alarm signal (col. 4 lines 16-21).

With respect to claim 18: since Luukkala performs detection of an optical signal, in a broad sense, it is considered, that this optical signal would be a maximum optical signal.

Art Unit: 2859

Luukkala does not teach a photo-detector as the light detecting means in the receiver 9.

Kim discloses a probe in the field of applicant's endeavor. Kim teaches that the receiver comprises a photo-detector 34 (Fig.2) to detect the optical signal from the probe.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a photo-detector, as taught by Kim, as the light detecting means disclosed by Luukkala, because both of them are well known alternate types of light detecting means which will perform the same function of detecting an optical signal corresponding to a temperature of the liquid of interest, if one is replaced with the other.

With respect to claim 19: Luukkala and Kim do not disclose the particular material, i.e., water for the liquid in the container. However, selecting the particular liquid for testing, absent any criticality, is only considered to be selecting a preferred liquid out of a plurality of liquids, whose temperature needs to be monitored.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device, disclosed by Luukkala and Kim, to monitor the temperature of the water, such as the water in a hot tub, to prevent unsafe temperatures.

With respect to claim 20: Luukkala discloses the probe, wherein the chemical is selected from the group consisting of paraffin wax.

With respect to claim 21: Luukkala discloses that the probe has a housing filled with the chemical/paraffin wax, which has a melting point in the range of 75-85 C (col.4 lines 58-60).

With respect to claims 22-23: Luukkala discloses the probe, with structure similar as the structure claimed by applicant and thus it is implied that the optical signal propagation in the

Art Unit: 2859

probe is secure and without any cross talk or interference problem and signal in the probe is unaffected by presence of electrical signals.

With respect to claim 24: Luukkala and Kim do not disclose the particular remote sensing of up to 1 km. However, this particular range, absent any criticality, is only considered to be the "optimum" range of the distance of the probe disclosed by Luukkala and Kim, that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy of signal transmission, the environment, where the probe is used, and particular location of the measuring equipment. See *In re Boesch*, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the probe with remote sensing up to 1 km in order to locate the receiver at a different, remote location other than the environment being tested.

With respect to claim 25: Luukkala and Kim do not disclose that the output signal increases six times from room temperature. However, this increase in output signal, absent any criticality, is only considered to be the "optimum" value of the signal increase used by the Luukkala and Kim, that a person having ordinary skill in the art at the time invention was made would have been able to determine using routine experimentation based, among other things, on the type of liquid being tested. See *In re Boesch* 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide that the output signal increases six times in order to facilitate the determination that a predetermined temperature has been reached.

Art Unit: 2859

With respect to claim 26: Luukkala discloses the method, wherein the chemical/paraffin wax is opaque at room temperature and becomes transparent at a predetermined higher temperature enabling actuation of a relay to at least one of stop a heating process and raise an alarm (col. 6 lines 7-11).

With respect to claim 27: Luukkala discloses the method, wherein the optical signal from the probe is comprised of focused light reflected by the mirror (col.4, lines 40-41).

3. Claims 28 and 29 are finally rejected under 35 U.S.C. 103(a) as being unpatentable over Luukkala, Kim as applied to claims 18-26 above, and further in view of Nelson (US 4,756,627).

Luukkala and Kim disclose an immersive probe that provides measurement of the temperature in a liquid container as stated in paragraph 2.

Luukkala and Kim do not disclose that the mirror is a concave mirror.

Nelson discloses in Fig.7 an optical temperature sensor using a concave mirror 98.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a concave mirror, as taught by Nelson, as the mirror disclosed by Luukkala and Kim, in order to have a desired (predetermined) focal length appropriate for the given system.

With respect to claim 28: Luukkala, Kim and Nelson do not disclose that the mirror is comprised of a concave mirror having a predetermined focal length. However, this increase in output signal, absent any criticality, is only considered to be the "optimum" value of the length of mirror used by Luukkala, Kim and Nelson, that a person having ordinary skill in the art at the time invention

Art Unit: 2859

was made would have been able to determine using routine experimentation based, among other things, on the mirror having a predetermined focal length. See *In re Boesch* 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a mirror having a predetermined focal length in order to focus concave mirror to reflect the light that is transmitted into the cell, and detecting the reflected light from the mirror.

With respect to claim 29: Luukkala, Kim and Nelson do not disclose that the method, comprising the step of transmitting the light signal through a cell having a focal length twice the focal length of the concave mirror. However, this increase the focal length of a cell, absent any criticality, is only considered to be the "optimum" value of the focal length of cell, used by Luukkala, Kim and Nelson, that a person having ordinary skill in the art at the time invention was made would have been able to determine using routine experimentation based, among other things, on the cell having a focal length twice the focal length of the concave mirror. See *In re Boesch* 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a cell having a focal length twice the focal length of the concave mirror, in order to accommodate the method steps of the claimed invention.

### ***Response to Arguments***

Art Unit: 2859

4. Applicant's arguments filed 10/10/2006 have been fully considered but they are not persuasive. Applicant states that the references do not disclose "detecting the reflected the light from the mirror depending on phase state of the chemical".

This argument is not persuasive because the first reference (Luukkala) discloses the method, wherein the optical signal from the probe is comprised of focused light reflected by the mirror (col.4, lines 40-41), as claimed by applicant.

Applicant states that the references do not disclose that reflected light has been transmitted through a phase-changing chemical, whereas the transparent phase of the chemical results in changing a signal. This argument is not persuasive because the first reference (Luukkala) discloses the method, wherein the chemical is opaque at a room temperature (changes phase) and becomes transparent at a predetermined higher temperature enabling actuation of a relay to at least one of "stop a heating process" and "raise an alarm" (col.4, lines 18-21), therefore, changing of the phase results in changing (different) output signals.

However, upon further consideration, a new ground(s) of rejection is made in view of Nelson.

The optical signal from the probe is comprised of focused light reflected by the

### **Conclusion**

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after



Art Unit: 2859


the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oxana Maslova whose telephone number is 571/ 272-6532. The examiner can normally be reached on 8:30 to 5:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 517/273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Oxana Maslova  
Patent Examiner  
January 17, 2006

  
GAIL VERBITSKY  
PRIMARY EXAMINER